



154207

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
841 Chestnut Building  
Philadelphia, Pennsylvania 19107-4431

JUN 23 1994

**SUBJECT:** Approval of a Funding Request for a Removal Action  
Lewes Coal Gas Site  
Lewes, Sussex County, Delaware

**FROM:** Peter H. Kostmayer *PHK*  
Regional Administrator (3RA00)

**TO:** Elliott P. Laws, Assistant Administrator  
Office of Solid Waste and Emergency Response (5101)

**THRU:** Henry L. Longest II, Director  
Office of Emergency and Remedial Response (5201)

**ATTN:** Deborah Y. Dietrich, Director  
Emergency Response Division (5202)

**I. ISSUE**

The attached CERCLA Funding Request pertains to the Lewes Coal Gas Site (Site) in Lewes, Sussex County, Delaware. The Delaware Department of Natural Resources and Environmental Control (DNREC) performed a Facility Evaluation at the Site (similar to an Expanded Site Investigation (ESI) under CERCLA) during October and November 1993. The facility evaluation results indicate that the source of the coal gas contamination at the Site has been found. The results show that contamination exists in both soil and ground water although the extent is not known; and that the contamination may be in the soils underneath at least one of the residential dwellings on the Site. An assessment of the Site performed in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan, as amended (NCP), 40 C.F.R. Part 300, by the staff of the Environmental Protection Agency (EPA) Region III shows strong evidence that hazardous materials from coal gas wastes may be buried beneath the Site and that these contaminated soils may pose an imminent threat to the public health or welfare or the environment (see attached DNREC and EPA analytical data). These wastes may potentially contaminate the nearby water supply in the town of Lewes.

Because conditions at the Site meet the criteria for initiating a Removal Action under Section 300.415 of the NCP, funds have been requested in the amount of \$622,320 of which \$580,320 are Extramural Costs, to mitigate the threats

AR300001

posed by the Site. Pursuant to Delegation of Authority 14-1-A giving the Regional Administrator authority to approve CERCLA Removal Actions with a total of less than \$2 million and completion within 12 months, Region III has approved this request for funds.

Attachment: Initial Funding Request

AR300002



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
841 Chestnut Building  
Philadelphia, Pennsylvania 19107-4431

JUN 23 1994

**SUBJECT:** Request for Funds for a Removal Action  
Lewes Coal Gas Site  
Lewes, Sussex County, Delaware

**FROM:** Dennis Matlock, On-Scene Coordinator  
Eastern Response Section (3HW31) *D. Matlock*

**TO:** Peter H. Kostmayer  
Regional Administrator (3RA00)

**THRU:** Abraham Ferdas, Associate Division Director  
for Superfund Programs (3HW02) *Abraham Ferdas*

**I. ISSUE**

A study conducted by the Delaware Department of Natural Resources and Environmental Control (DNREC) in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300, shows strong evidence that hazardous substances exist in both soil and ground water, that contamination may be in the soils underneath at least one of the residential dwellings at the Lewes Coal Gas Site (Site) in Lewes, Delaware, and that these materials may pose a threat to the public health or welfare or the environment. The OSC has verified DNREC data and determined that this Site meets the criteria for initiating a Removal Action under Section 300.415 of the NCP. Funds are needed to mitigate the threat to the public health or welfare or the environment posed by this Site.

Based upon the results of the DNREC facility evaluation, the apparent present risk as described by DNREC's toxicologist to the residents living on the Site, and the Site's orphan status, the EPA Superfund Removal Branch received a request from the DNREC to enlist their removal authority under CERCLA to address the soil source contamination at the Lewes Coal Gas Site, in Lewes, Sussex County, Delaware.

**II. BACKGROUND**

**A. Site Description**

The Lewes Coal Gas Site is located along Kings Highway in Lewes, Sussex County, Delaware. The Site consists of approximately 12 acres of land on four parcels of property, owned

AR300003

by two parties, Walter F. Carlsten and John Pagonis. The Site is bounded to the north and west by the Delaware Coast Railroad Line, to the south by Beach Plum Drive and residences, and to the east by Kings Highway. Definitive Site boundaries have not been determined as it appears that contamination from the former coal gas operation may exist on adjacent properties. Surrounding land use consists of residential and business areas, beach and recreational areas, and Cape Henlopen State Park.

## **B. Site Background**

Prior to 1919, the use of the Site property is unknown. According to the Lewes Coal Gas Site Investigation report prepared by DNREC, the Lewes Gas Company operated on the Carlsten property between 1919 and 1931. Specific dates of operation are unavailable, but it is known that the plant was active in 1922 and inactive in 1931. Coal gas was produced at the Site and provided to the Lewes community for heating, cooking, and lighting through approximately 6 miles of pipe. Previous structures at the Site included an iron roof building used as a gas plant; one iron gas container, one iron gas holder; two circular purifiers; and one iron oil tank. Most of the structures have been demolished.

The coal for the plant was delivered to the Site by the railroad. The disposal location of the spent coal residue is unknown. However, DNREC is concerned that the adjacent properties north of the railroad may have been used for disposal since the properties were vacant while the Lewes Gas Company was in operation. DNREC is performing an ongoing investigation of the nearby properties.

Presently, two residences, a garage, and a small railroad station are situated on the Carlsten property. There is a storage building and the remains of a building on the Pagonis properties. Almost all of the Pagonis property is paved or covered with 4 to 5 inches of concrete or gravel. The Carlsten property with residences is grassed and access to the Site is unrestricted.

Four previous investigations were conducted on the Lewes Coal Gas Site: a preliminary assessment, January 1989; a sampling event conducted by DNREC, April 19, 1989; a site inspection conducted by DNREC, June 6, 1989; and an environmental assessment, December 1-2, 1989.

The DNREC 1993 sampling results indicate the soil and ground water at the location of the former coal gas facility to be contaminated with several volatile organic compounds (VOCs) including benzene, toluene, ethylbenzene, and xylenes, (collectively known as BTEX), and polynuclear aromatic hydrocarbons (PAHs) such as naphthalene and acenaphthylene.

AR300004

### **C. Types of Substances Present**

Information from the facility evaluation has identified that the contaminant sources at the Lewes Site are the coal tar wastes present in soils at the Site. It is likely that all of the source material at the Site is located above the water table. It is believed that these contaminated materials may be partially contained in the remains of a gas holder or concrete structure related to the gas manufacture process. This source location identified at the Lewes Coal Gas Site is allowing contaminants to migrate into unsaturated soil, into saturated soil, and into ground water.

Most of the semivolatile organic compounds associated with coal tar are polycyclic or polynuclear aromatic hydrocarbons (PAHs). Included in this group are: acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, benzoic acid, chrysene, dibenz(a,h)anthracene, dibenzofuran, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, pyrene and 2-methylnaphthylene. Many of these compounds are considered to be hazardous substances under Section 101(14) of CERCLA, 42 U.S.C. Section 9601(14).

The soils investigated by DNREC and EPA revealed that the former facility soils are contaminated with BTEX compounds and with PAHs with the highest concentrations found in the vicinity of the former gas holder (see attached DNREC and EPA analytical data). Ground water has also been impacted by the same classes of contaminants as the soil (i.e., BTEX and PAHs).

Organic vapor readings have been elevated at locations where previous well drilling activities have occurred.

### **D. National Priorities List Status**

A Hazard Ranking System (HRS) report on the Site was issued on June 14, 1990, and the Site received an HRS score of 29.59. The Site is not presently on the National Priorities List (NPL).

### **E. State and Local Authorities' Roles**

DNREC has requested EPA assistance at this Site. The OSC will coordinate Site activities with State and local officials. The Delaware DNREC will continue their Site investigation and has expressed their willingness to continue remediation of the Lewes Coal Gas Site after planned response action eliminates the soil contamination within the former gas holder area.

AR300005

### III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT

Section 300.415 of the NCP lists the factors to be considered in determining the appropriateness of a Removal Action. Paragraphs (b)(2)(i), (ii), (iii), and (vii) of Section 300.415 directly apply as follows to the conditions at the Lewes Coal Gas Site:

- A. 300.415(b)(2)(i) "Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants."

Site access is totally unrestricted. There are at least two residences located within the Site boundaries, and additional homes are located within 100 feet of the Site. BTEX compounds and PAHs in the soil at or near the surface have been identified. There is the threat of transport of these hazardous compounds via runoff to the adjacent residential neighborhood.

- B. 300.415(b)(2)(ii) "Actual or potential contamination of drinking water supplies or sensitive ecosystems."

The potential for hazardous materials to leach into the Lewes drinking water supply is significant. Presently, there is some conflicting data as to the direction of ground water flow. The production wells that supply the town with drinking water are located less than one mile to the west of the Lewes Coal Gas Site. Analytical data from onsite monitoring wells indicate contamination has entered the ground water.

- C. 300.415(b)(2)(iv) "High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate."

Nothing is known about the structural remains of the coal gas holder below the surface of the Site. Sampling by EPA and DNREC indicate the presence of contaminants in the soil near the remains of the coal gas holder. The possibility of a continual release of additional hazardous materials from the remains of the gas holder into the ground water system and the surrounding soil is of significant concern.

- D. 300.415(b)(2)(vii) "The availability of other appropriate Federal or state response mechanisms to respond to the release."

AR300006

DNREC does not possess the resources to effect a complete cleanup of the Lewes Coal Gas Site, and has requested EPA assistance. Consideration has been given to both the Oil Pollution Act of 1990 (OPA), 33 U.S.C. §§2701 to 2761, and the Underground Storage Tank (UST) regulations at 40 C.F.R. Part 280 of the Resource Conservation and Recovery Act, as amended, 42 U.S.C. §§ 6901 to 6992k, however, insufficient data is available and the conditions at the Site merit action under CERCLA. Although it is possible that there is a substantial threat of a discharge of hazardous substances under OPA, it is not known whether it affects the navigable waters or adjoining shorelines and whether the discharge is in such quantities as may be harmful (40 C.F.R. § 117). Enough information is not known on whether the gas holder or concrete structure is an underground storage tank under the UST regulations.

#### **IV. ENDANGERMENT DETERMINATION**

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to the public health or welfare or the environment.

#### **V. PROPOSED ACTION AND COSTS**

##### **A. Proposed Actions**

The Actions proposed to eliminate the imminent threat to the health or welfare or the environment posed by the Lewes Coal Gas Site are as follows:

- \* Confirm and delineate the location of the coal gas soil contamination source. Sample the soils in order to determine the extent of soil contamination and substance migration.
- \* Excavate contaminated soil from the identified coal gas holder area and adjacent contaminated soil areas. Excavation of soil and debris beneath the onsite building structures may be necessary.
- \* Excavate and remove coal gas plant remnants (concrete pad) and residues on the Carlsten property to mitigate any future contaminant migration.
- \* Prepare the contaminated soil/debris for transportation and proper disposal.
- \* Transport the materials to an appropriate disposal facility.
- \* Obtain confirmation of disposal of all wastes.

AR300007

- \* Backfill excavated area up to grade and revegetate.

Hazardous soils/debris will be excavated and soil contamination evaluated. It is currently estimated that the project will run less than the statutory 12-month time limit for removal actions, barring unforeseen circumstances or disposal restrictions.

#### B. Estimated Costs

<u>Extramural Costs</u>	<u>Proposed Cost</u>
Regional Allowance Costs ERCS (includes T&D)	\$458,600
Other Costs Not Funded From the Regional Allowance	
TAT	25,000
Subtotal Extramural	\$483,600
20% Contingency	96,720
<b>Total Extramural</b>	<b>\$580,320</b>
<u>Intramural Costs</u>	
Direct Cost	15,000
Indirect Cost	27,000
<b>Total Intramural</b>	<b>\$42,000</b>
<b>Estimated Total Project Ceiling</b>	<b>\$622,320</b>

#### C. Contribution to Remedial Performance

The Lewes Coal Gas Site is not on the NPL, and a long-term Remedial Action has not yet been selected. The proposed Removal Action is consistent with the NCP removal criteria. The proposed activities are not anticipated to impede future responses.

#### D. Compliance with ARARs

The proposed Removal Action set forth in this Memorandum will comply with all applicable and relevant and appropriate environmental and health requirements, to the extent practicable, considering the exigencies of the situation (see above discussion regarding Federal UST regulations).

The State of Delaware has been requested to supply written notification regarding any State statutes and regulations that the State believes are potential ARARs for the Lewes Coal Gas Site.

AR300008



**VI. EXPECTED CHANGE IN THE SITUATION SHOULD NO ACTION BE TAKEN OR ACTION DELAYED**

Because its residential location allows unrestricted access to the Site, potential disturbance of the remnants of the buried coal gas holder may lead to further contamination and exposure. The soil contaminants have already migrated into the underlying ground water and may potentially migrate into surrounding wells supplying drinking water to local residents.

It is probable that contamination by runoff would lead to the killing of flora and fauna. The possibility of human contact and exposure to hazardous substances via runoff is also very high.

**VII. OUTSTANDING POLICY ISSUES**

There are no outstanding policy issues associated with the Lewes Coal Gas Site.

**VIII. ENFORCEMENT**

The U.S. EPA Region III Enforcement Section has been provided with all background information available to pursue any and all Enforcement Actions pertaining to the Lewes Coal Gas Site. See the attached Confidential Enforcement Addendum for further information regarding the Site.

**IX. RECOMMENDATION**

Because the conditions at the Lewes Coal Gas Site meet the NCP Section 300.415 criteria for a Removal Action, I recommend your approval of this request for \$622,320, of which approximately \$580,320 are Extramural Costs. Please indicate your approval or disapproval by signing below. I recommend your approval to initiate response actions because of the nature of the threat described herein.

Approved: \_\_\_\_\_

Date: \_\_\_\_\_

6-23-94

Disapproved: \_\_\_\_\_

Date: \_\_\_\_\_

Attachments: Confidential Enforcement Addendum  
DNREC Analytical Data  
EPA Analytical Data

AR300009



STATE OF DELAWARE  
DEPARTMENT OF NATURAL RESOURCES  
AND ENVIRONMENTAL CONTROL  
DIVISION OF AIR AND WASTE MANAGEMENT  
715 GRANTHAM LANE  
NEW CASTLE, DELAWARE 19720-4801

WASTE MANAGEMENT SECTION

TELEPHONE: (302) 323-4540

January 14, 1994

Mr. Dennis Carney, Chief (3HW30)  
U.S. EPA, Region III  
Superfund Removal Branch  
841 Chestnut Building  
Philadelphia, PA 19107

RE: Lewes Coal Gas Site  
Lewes, Sussex County, Delaware

Dear Mr. Carney:

By this letter the Delaware Department of Natural Resources and Environmental Control (DNREC) requests the EPA Superfund Removal Branch to consider undertaking removal activities to address the source soil contamination at the Lewes Coal Gas site in Lewes, Delaware using CERCLA authorities. Presently, the site is being addressed under the State of Delaware's Hazardous Substance Cleanup Act. DNREC performed a Facility Evaluation at the site (similar to an expanded site investigation (ESI) under CERCLA) during October and November 1993. The facility evaluation results indicate that the source of the coal gas contamination at the site has been found; contamination exists in both soil and groundwater although the extent is not known; and the contamination may be in the soils underneath at least one of the dwellings on the site. The final facility evaluation report will not be complete for another four to five weeks.

Using the analytical results from soil sample A-2, collected from a depth of 6-12 inches below grade, DNREC's toxicologist evaluated the risks posed to the adult tenants presently living on the site. DNREC's toxicologist determined that a total increased incremental lifetime cancer risk of  $1.9E-04$  exists for the adult tenants presently living on the site. No children live on the site according to the property owner. DNREC has also performed a potentially responsible party search for the site and concluded that the site is an orphan site.

Based upon the results of the facility evaluation, the apparent present time risk evaluated by DNREC's toxicologist to the adults tenants living on the site, and the site's orphan status, we are asking for you to consider using the removal authorities under CERCLA to address the source soil contamination at the site.

Attached to this letter are the following documents to aid your evaluation:

1. Summary of site background, including previous investigatory work performed by DNREC and the City of Lewes.

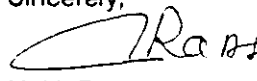
AR300010

Mr. Dennis Carney  
January 14, 1994  
Page 2

2. Facility Evaluation final workplan.
3. Validated soil and groundwater analytical data from the facility evaluation in October and November 1993.
4. Boring and well logs from the facility evaluation activities.
5. Maps and a table showing the results of the facility evaluation.
6. Request for and results of a risk evaluation for the adult tenants living at the site using the analytical results from sample A-2.
7. Potentially responsible party search information.

Representatives of DNREC will be attending the RDT screening committee meeting on January 20, 1994 and the RDT meeting on January 27, 1994. We hope that this site can be considered for action at these meetings. Due to the apparent present time risk posed to adult tenants living on the site, we do not wish to delay work at the site to mitigate the risk. Thank you for your consideration. If you have any questions please contact myself or Karl Kalbacher at (302) 323-4540.

Sincerely,

 1/14/94

N. V. Raman  
Manager  
Superfund Branch

AVH:dw  
AVH94003.wp

Enclosures

pc: Nicholas Di Pasquale  
Karl Kalbacher  
Anne Hiller

AR300011

**Delaware DNREC Analytical Results  
(November 1993)  
Lewes Coal Gas Site  
Lewes, Delaware**

AR300012

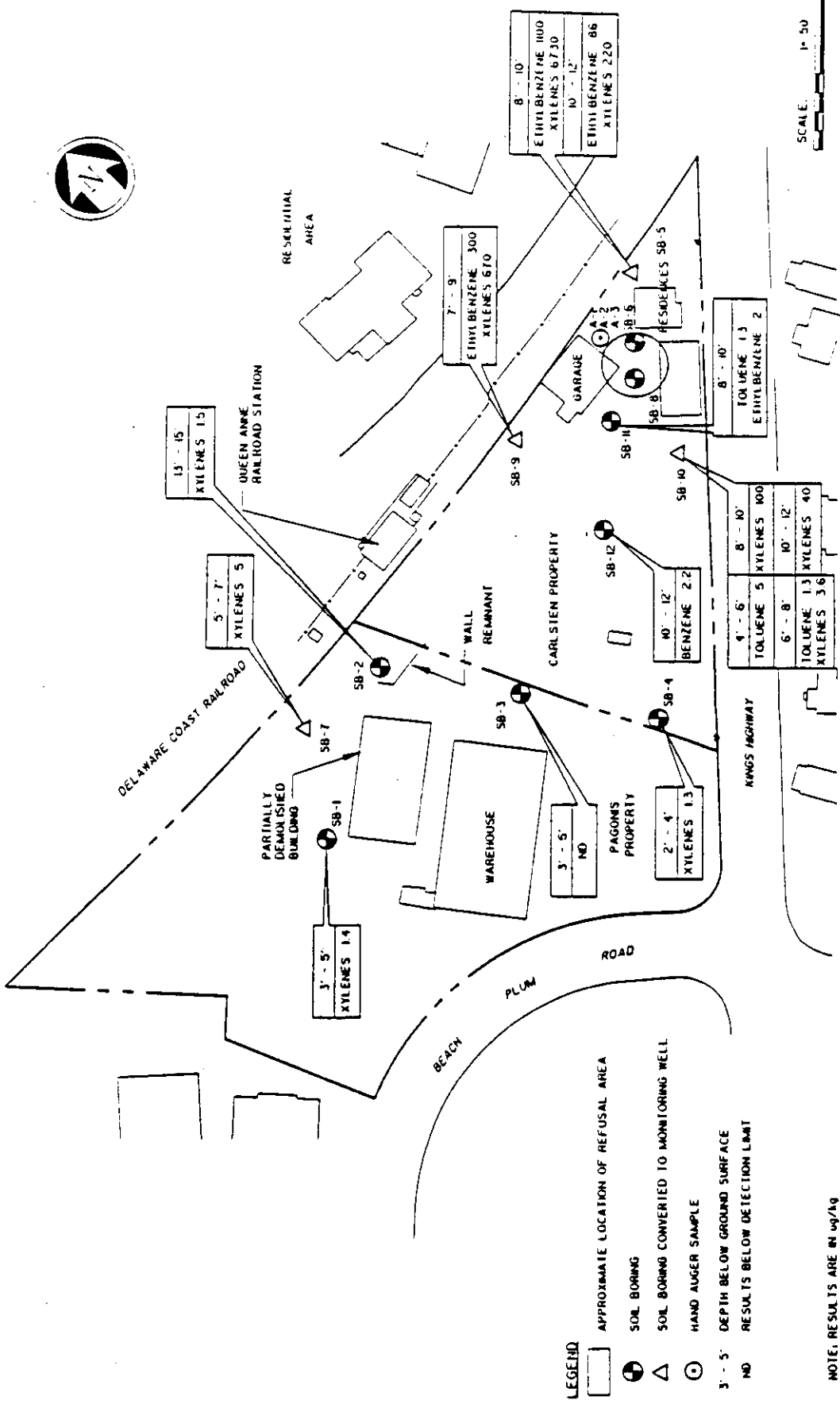
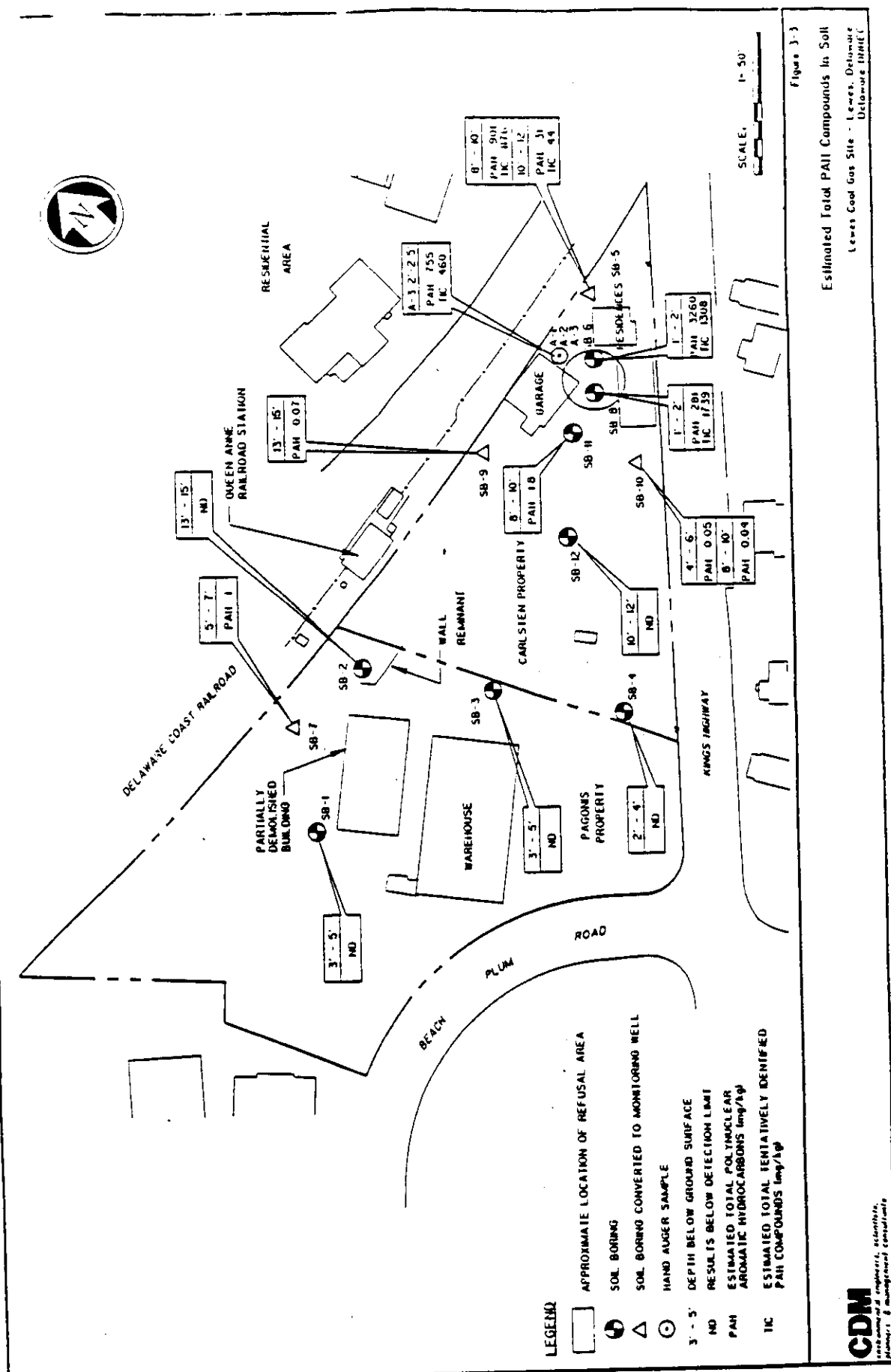


Figure 3.2  
Estimated BTEX Compounds in Soil  
Lewis Coal Gas Site - Lewis, Delaware  
Delaware DMHC

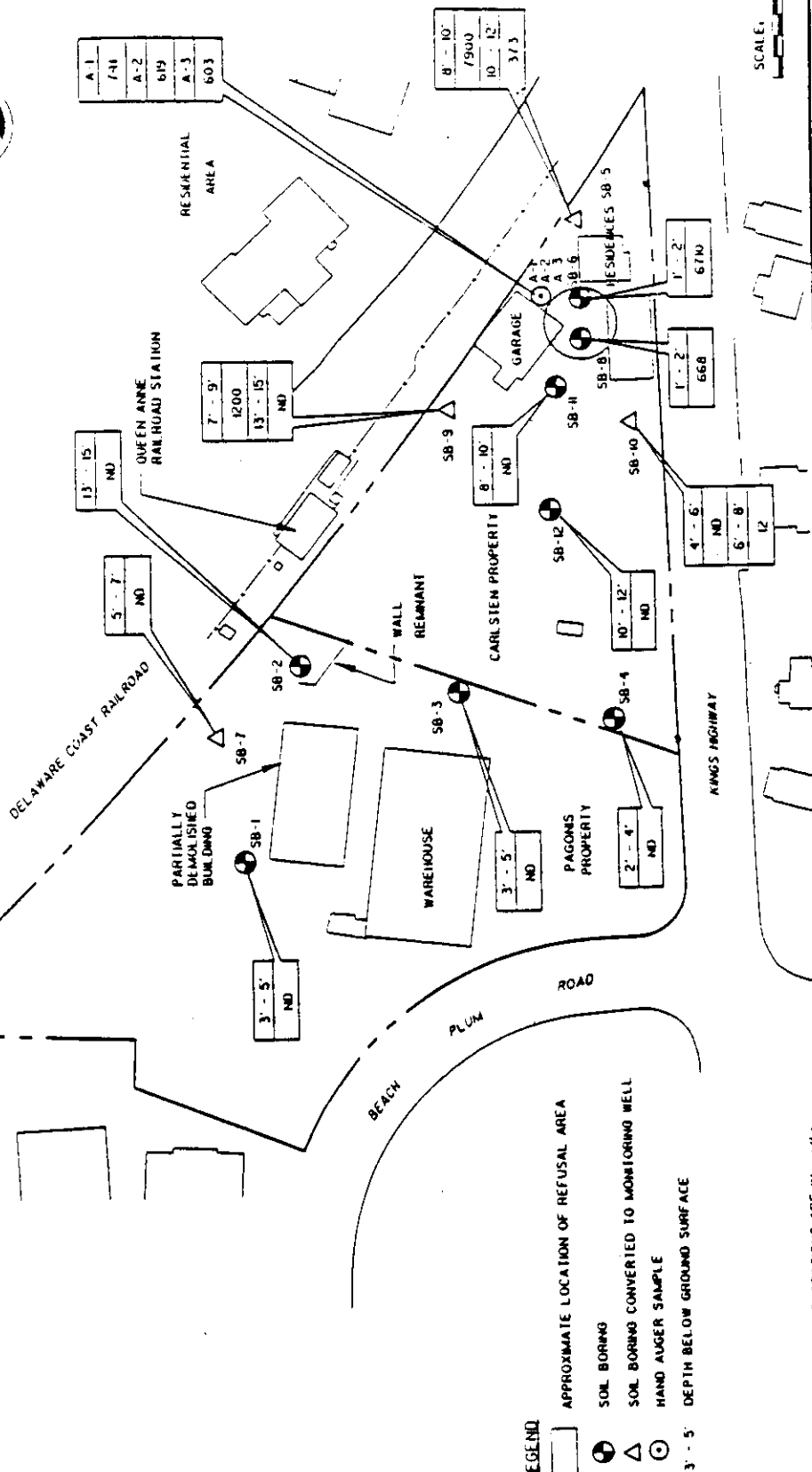
- LEGEND**
- APPROXIMATE LOCATION OF REFUSAL AREA
  - SOIL BORING
  - SOIL BORING CONVERTED TO MONITORING WELL
  - HAND AUGER SAMPLE
  - 3' - 5' DEPTH BELOW GROUND SURFACE
  - ND RESULTS BELOW DETECTION LIMIT

NOTE: RESULTS ARE IN ug/kg





AR300014



- LEGEND**
- APPROXIMATE LOCATION OF REFUSAL AREA
  - SOIL BORING
  - △ SOIL BORING CONVERTED TO MONITORING WELL
  - HAND AUGER SAMPLE
  - 3' - 5' DEPTH BELOW GROUND SURFACE

NOTE: CONCENTRATIONS ARE IN mg/kg

SCALE: 1" = 50'

Figure 3-1

**Total Petroleum Hydrocarbon Compounds in Soil**

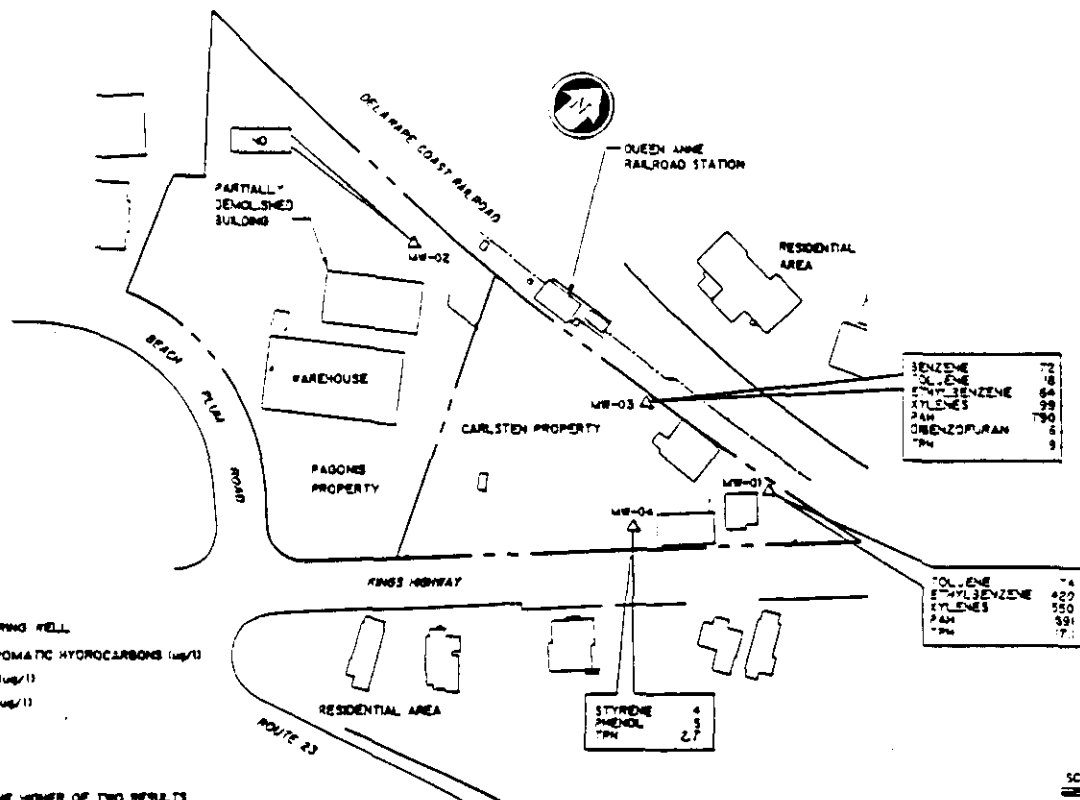
Lewis Coal Gas Site - Lewis, Delaware  
Delaware DRI/ELC



environmental engineers, scientists,  
planners & management consultants







**CDM**

CONSTRUCTION, ENVIRONMENTAL, AND INDUSTRIAL  
ENGINEERING, AND MANAGEMENT CONSULTANTS

Volatile and Semivolatile Organics in Groundwater

Lewis Coal Gas Site - Lewis, Delaware

January 1997

AR300017



**EPA Analytical Results (April 1994)**  
**Lewes Coal Gas Site**  
**Lewes, Delaware**

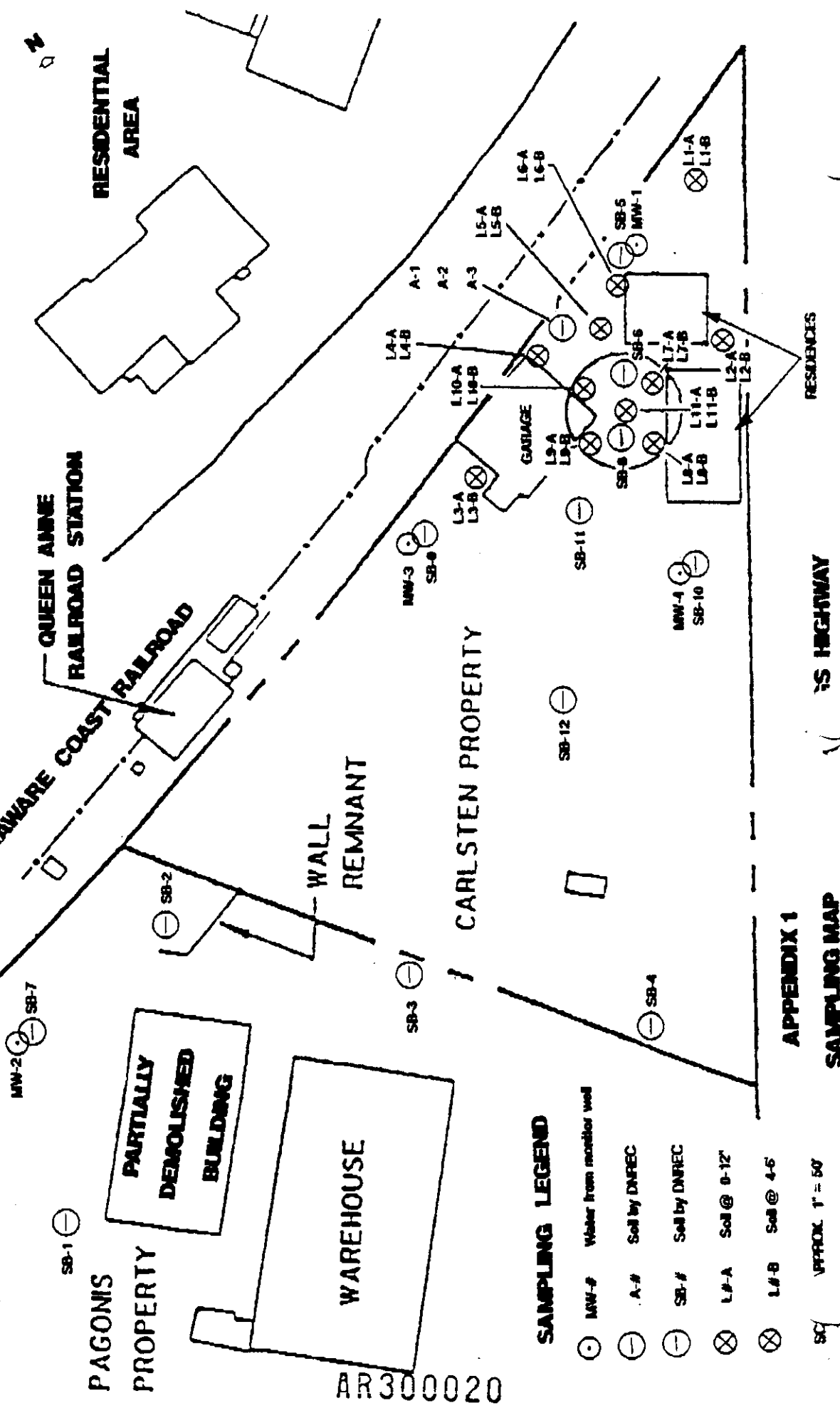
AR300019

**LEWES COAL GAS SITE  
LEWES, DELAWARE**

**TDO NUMBER : 9402-10  
PCS NUMBER : 5098**



**WESTON**  
MAJOR  
PROGRAMS  
DIVISION



**SAMPLING LEGEND**

- MW-# Water from monitor well
- ⊖ A-# Soil by DNREC
- ⊖ SB-# Soil by DNREC
- ⊗ L#-A Soil @ 0-12"
- ⊗ L#-B Soil @ 4-6"

**APPENDIX 1  
SAMPLING MAP**

VPFROK 1" = 50'

AR300020

LEWIS L GAS SITE DATES SAMPLED: 18 APRIL and JUL 1994  
 SOIL SAMPLES - BNAS ALL RESULTS in ug/Kg (PPB) SAMPLE DEPTHS ARE IN INCHES

LOCATIONS:	L01A (0-12)	L01B (54-72)	L02A (0-12)	L02B (48-72)	L03A (0-16)	L04A (0-24)	L04B (24-48)	L04C (66-84)
NAPHTHALENE	ND	ND	6400	3500	500	260 J	530 J	26000
2-METHYLNAPHTHALENE	ND	ND	1000 J	680	160 J	370 J	630 J	19000
ACENAPHTHYLENE	73 J	ND	30000	1300	270 J	890 J	1300	11000
ACENAPHTHENE	ND	ND	1000 J	5300	55 J	ND	ND	17000
DIBENZOFURAN	ND	ND	ND	360 J	ND	ND	ND	880 J
FLUORENE	ND	ND	860 J	3000	76 J	ND	1100 J	8700
PHENANTHRENE	230 J	ND	12000	8800 E	630	710 J	1900 J	21000
ANTHRACENE	66 J	ND	13000	3600	210 J	380 J	3000 J	12000
FLUORANTHENE	430	ND	29000	4600	720	940 J	5000	18000
PYRENE	340 J	ND	43000	6000	1400	1300 J	7400	19000
BENZO(a)ANTHRACENE	160 J	ND	20000	2000	430	440 J	4200	10000
CHRYSENE	290 J	ND	3300 J	310 J	690	660 J	1300 J	11000
BENZO(b)FLUORANTHENE	210 J	ND	29000	960	440	760 J	6500	3900
BENZO(k)FLUORANTHENE	150 J	ND	12000	1400	540	460 J	6800	2900 J
BENZO(a)PYRENE	160 J	ND	26000	2200	450	670 J	10000	7500
INDENO(1,2,3-cd)PYRENE	110 J	ND	20000	750	250 J	650 J	11000	3200 J
DIBENZ(a,h)ANTHRACENE	54 J	ND	7800	340 J	94 J	ND	4200	2100 J
BENZO(g,h,i)PERYLENE	120 J	ND	26000	950	360 J	950 J	18000	4600

LOCATIONS:	L05A (0-12)	L05B (48-78)	L06A (0-12)	L06B (66-78)	L07A (0-12)	L07B (48-78)	L08A (0-12)	L08B (36-48)
NAPHTHALENE	360 J	1000	94 J	ND	260 J	16000 E	10000	170000 E
2-METHYLNAPHTHALENE	230 J	790	ND	ND	2100	81000 E	26000	130000 E
ACENAPHTHYLENE	1000	480	240 J	ND	9000	13000	48000	25000
ACENAPHTHENE	ND	630	ND	ND	290 J	52000	44000	66000 E
DIBENZOFURAN	50 J	93 J	ND	ND	400 J	3400 J	3300 J	4400
FLUORENE	75 J	570	ND	ND	620 J	28000	41000	42000
PHENANTHRENE	950	1700	200 J	ND	3100	72000 E	110000 E	120000 E
ANTHRACENE	460	660	91 J	ND	5900	28000	50000	56000
FLUORANTHENE	1600	730	480	ND	10000	38000	94000 E	68000 E
PYRENE	2100	950	560	ND	18000	44000	140000 E	63000 E
BENZO(a)ANTHRACENE	940	340 J	240 J	ND	6200	15000	75000 E	33000
CHRYSENE	1400	360 J	330 J	ND	1200 J	2200 J	62000 E	31000
BENZO(b)FLUORANTHENE	1100	110 J	220 J	ND	5900	8700	45000	18000
BENZO(k)FLUORANTHENE	820	140 J	310 J	ND	5000	8400	26000	15000
BENZO(a)PYRENE	1300	280 J	310 J	ND	8800	16000	100000 E	27000
INDENO(1,2,3-cd)PYRENE	1500	93 J	310 J	ND	5000	5200	54000	14000
DIBENZ(a,h)ANTHRACENE	450	ND	ND	ND	1600 J	2300 J	20000	5600
BENZO(g,h,i)PERYLENE	2400	160 J	510	ND	7500	5900	72000	18000

LEWES COAL GAS SITE		DATES SAMPLED: 18 APRIL and 19 APRIL 1994				
SOIL SAMPLES - BNAS		ALL RESULTS in ug/Kg (PPB)				
		SAMPLE DEPTHS ARE IN INCHES				
LOCATIONS:	L09A (0-12)	L09B (12-23.5)	L10A (0-9)	L10B (9-18)	L11A (0-12)	L11B (12-22.5)
NAPHTHALENE	1000 J	190000 E	ND	17000	ND	400000 E
2-METHYLNAPHTHALENE	940 J	130000 E	ND	17000	580 J	260000 E
ACENAPHTHYLENE	11000	83000 E	2200	18000	12000	130000 E
ACENAPHTHENE	ND	31000	ND	10000	ND	28000
DIBENZOFURAN	430 J	6900	ND	1100 J	550 J	11000
FLUORENE	970 J	46000	ND	12000	1200 J	73000 E
PHENANTHRENE	880 J	99000 E	1100 J	26000	ND	230000 E
ANTHRACENE	2700 J	44000	630 J	12000	3000 J	77000 E
FLUORANTHENE	3100 J	66000 E	1700 J	17000	940 J	150000 E
PYRENE	4700	73000 E	2200	18000	2900 J	140000 E
BENZO(a)ANTHRACENE	3300 J	34000	1100 J	7400	3700	85000 E
CHRYSENE	1100 J	35000	180 J	7900	820 J	53000
BENZO(b)FLUORANTHENE	5600	39000	1600 J	4900	9900	68000 E
BENZO(k)FLUORANTHENE	6000	9400	1100 J	5900	6300	32000
BENZO(a)PYRENE	9100	38000	1700 J	8200	12000	150000 E
INDENO(1,2,3-cd)PYRENE	9900	30000	1900	4600	12000	69000 E
DIBENZ(a,h)ANTHRACENE	3600 J	12000	430 J	1600 J	3800	5300
BENZO(g,h,i)PERYLENE	14000	38000	2700	6000	16000	88000 E
LOCATIONS:	L12A (0-12)	L12B (24-48)	L12C (48-78)	L13A (0-12)	L13B (48-78)	
NAPHTHALENE	2000 J	ND	2200	ND	97000 E	
2-METHYLNAPHTHALENE	530 J	470 J	1100	2700 J	50000	
ACENAPHTHYLENE	18000	1800 J	1500	11000	8600	
ACENAPHTHENE	ND	ND	4300	ND	36000	
DIBENZOFURAN	ND	210 J	350 J	530 J	2200 J	
FLUORENE	1000 J	ND	2400	1100 J	23000	
PHENANTHRENE	9400	ND	5800	1800 J	59000	
ANTHRACENE	8600	530 J	2700	5800	20000	
FLUORANTHENE	24000	ND	2200	6300	26000	
PYRENE	37000	600 J	3300	12000	33000	
BENZO(a)ANTHRACENE	19000	ND	2000	4100	10000	
CHRYSENE	2000 J	240 J	290 J	1200 J	1300 J	
BENZO(b)FLUORANTHENE	21000	ND	760	4500	6800	
BENZO(k)FLUORANTHENE	12000	ND	570	4300	4700	
BENZO(a)PYRENE	19000	460 J	1300	7000	11000	
INDENO(1,2,3-cd)PYRENE	15000	480 J	400 J	4600	4500	
DIBENZ(a,h)ANTHRACENE	5400	ND	230 J	1400 J	1600 J	
BENZO(g,h,i)PERYLENE	19000	930 J	460	7400	5	

AR3000022

LEWES COAL GAS SITE		DATES SAMPLED: 18 APRIL and 19 APRIL 1994			
SOIL SAMPLES - BTEX		ALL RESULTS in ug/Kg (PPB)		SAMPLE DEPTHS ARE IN INCHES	
LOCATION	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES	
L01A (0-12)	ND	ND	ND	ND	
L01B (54-72)	ND	ND	ND	ND	
L02A (0-12)	ND	ND	ND	ND	
L02B (48-78)	ND	ND	1200 J	1580 J	
L03A (0-16)	ND	ND	ND	ND	
L04A (0-24)	ND	ND	ND	ND	
L04B (24-48)	ND	ND	ND	ND	
L04C (66-84)	ND	ND	2800	5800	
L05A (0-12)	ND	ND	ND	ND	
L05B (48-78)	ND	ND	8	8 J	
L06A (0-12)	ND	ND	ND	ND	
L06B (66-78)	ND	ND	ND	ND	
L07A (0-12)	ND	ND	ND	ND	
L07B (48-78)	ND	1500 J	24000	25300	
L08A (0-12)	840	1500	230 J	5700	
L08B (36-48)	ND	1200 J	10000	8800 J	
L09A (0-12)	ND	ND	ND	ND	
L09B (12-23.5)	ND	59000	96000	201000	
L10A (0-9)	ND	ND	ND	ND	
L10B (9-18)	ND	ND	1300 J	3400 J	
L11A (0-12)	ND	ND	ND	ND	
L11B (12-22.5)	ND	39000	56000	205000	
L12A (0-12)	ND	ND	ND	ND	
L12B (24-48)	ND	ND	ND	ND	
L12C (48-78)	ND	ND	400 J	310 J	
L13A (0-12)	ND	ND	ND	ND	
L13B (48-78)	ND	ND	38000	43000	

AR300023

